Energy Policy Update

Energy and Environmental News

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This newsletter is published by the Governor's Office of Energy Policy and is provided free of charge to the public. It contains verbatim excerpts from international and domestic energy and environment-related publications reviewed by the Education and Community Outreach personnel. For inquiries, call **(602) 771-1143** or toll free **(800) 352-5499**. Compiled and edited by Gloria Castro, Special Projects Coordinator. To register to receive this newsletter electronically or to unsubscribe, email Gloria Castro.

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ARIZONA

Abengoa Will Have the Support of Banco Santander in Developing the World's Largest Concentrating Solar Power Plant

[EnergyTrend.com, Apr. 23] Abengoa (MCE: ABG), the international company that applies innovative technology solutions for sustainable development in the energy and environment sectors, has announced that it will collaborate with Capital Riesgo Global, a subsidiary of Banco Santander, which will become a financial partner in the development of Solana, the largest concentrating solar power plant in the world. The plant, which is currently being built by Abengoa in Arizona, will have a production capacity of 280 MW gross and will be the first solar plant in the United States with the ability to store energy. Capital Riesgo Global will invest $125 million in exchange for an equity stake in the project. The total investment for Solana is around $2,000 million. Abengoa obtained a federal loan guarantee for approximately $1.45 billion in December 2010 from the U.S. Department of Energy (DOE) Loan Programs Office to finance this project. This investment, which has been approved by the U.S. Department of Energy and the Federal Energy Regulatory Commission (FERC), will reduce Abengoa's own capital requirement contribution and is fully compatible with the potential entry of a tax equity investor in the project.

ASU, EPA Partner to Engage Students in Green Careers

[ASU Insights, Apr. 18] The U.S. Environmental Protection Agency and Arizona State University signed a Memorandum of Understanding designed to increase their outreach to diverse and underserved communities by offering internships, joint projects, and scientific research opportunities to ASU students and faculty. "EPA will benefit from the tremendous pool of talent, energy and commitment offered by Arizona State students," said Jared Blumenfeld, EPA's regional administrator for the Pacific Southwest. "This collaboration will enhance participation in environmental studies by students from every corner of the state." Arizona State University offers leading-edge research and education in fields that impact health, energy and environmental quality. ASU, home to the Global Institute of Sustainability and the Ira A. Fulton Schools of Engineering, has earned national recognition for the number of degrees awarded to Native American and Hispanic students. ASU has been able to attract a diverse

student body through recruitment statewide and at community colleges.

Arizona Oks APS Buyout of 2 N.M. Coal Generators

[Arizona Republic, Apr. 18] State regulators on Wednesday approved a deal for Arizona Public Service Co. to proceed with a buyout of two Southern California Edison coal generators in northwest New Mexico. APS still needs approval from the Federal Energy Regulatory Commission and must secure a fuel contract for the Four Corners Power Plant with BHP Billiton. Officials expect the deal to close late this year. APS announced the proposal in November 2010. It would spend $294 million buying Edison's majority stake in two of Four Corner's newer, cleaner-burning generators, and close three older units at the plant. If the deal goes as planned, APS would return to the Arizona Corporation Commission to request a rate increase to pay for the new units. Officials estimate that increase would be about 3 percent on the average customer's bill, starting next year. Buying a larger stake in the two newer generators would cost APS and its customers less than upgrading the oldest units to comply with environmental regulations, APS officials said. The nearly 50-year-old plant near Farmington, N.M., supplies power to utility customers in four states. Edison has been looking to get out of the plant because California regulated utilities are prevented by state law from investing in power plants that don't meet environmental standards related to global warming. Advocates of the deal have argued keeping part of the plant open is in the best interest of the Navajo Nation, where the plant and mine that supplies it are located.

BLM to Hold Meetings on NM-Ariz. Power Line

[East Valley Tribune, Apr. 17] The public will have a chance to chime in on a proposed high-voltage power line that would run through New Mexico and Arizona. The Bureau of Land Management has scheduled a series of open house meetings in both states on an electrical transmission line that could provide up to 2,500 megawatts of electricity. Southline Transmission is proposing building the line in two segments. The first segment would stretch 225 miles from a substation in Afton, N.M. to one in Apache, Ariz. The second would be an upgrade of 130 miles of an existing line between Apache and a substation outside of Tucson. The line would cross federal, state and private lands. The first meeting is scheduled for May 8 in Las Cruces, N.M.

First Solar to Shut German Facility, Lay Off 2,000

[Phoenix Business Journal, Apr. 17] First Solar Inc. announced this morning it will close its German facility, slow production in Malaysia and lay off about 2,000 employees in a major restructuring at the panel manufacturer. Tempe-based First Solar (Nasdaq: FSLR) said it will close the Frankfurt (Oder) facility because the European solar market has deteriorated with countries reducing their incentive programs. It also will close four of the 24 Kulim, Malaysia, production lines. The company expects the restructuring to cost between $245 million and $370 million, which will show up on its first quarter reports. The company also plans to pay down $145 million in debt. The layoffs represent about 30 percent of First Solar's workforce. “The solar market has fundamentally changed, and we are quickly adapting our market approach and operations to maintain and build upon our competitive advantage,” said Mike Ahearn, chairman and interim CEO of First Solar. “After a period of robust growth, First Solar is scaled to operate at higher volumes than currently exist following the reduction of subsidies in key legacy markets. As a result, it is essential that we reduce production and decrease expenses to reflect the smaller volume of high-probability demand we forecast. These actions will enable us to focus our resources on developing the markets where we expect to generate significant growth in coming years.” The Frankfurt plant recently had been expanded to accommodate expected growth in Europe. Malaysia also had been expanded, and at the time First Solar had been preparing to open more production in Mesa and Vietnam. The Vietnam plan has been scrapped and the Mesa facility is on hold, housing only some administration and research workers.

First Contract Awarded for Navajo Water Project

[Associated Press, Apr. 16] Gallup, N.M. – Federal officials say they have awarded the first construction contract for work on the massive federal Navajo-Gallup Water Supply Project. The 280-mile, $1 billion pipeline project will serve more than 43 Navajo communities in New Mexico and Arizona, the city of Gallup and a portion of the Jicarilla Apache Nation in northern New Mexico. Interior Secretary Ken Salazar announced the $10.75 million contract with Idaho-based McMillen LLC on Monday. The company will be placing the first four miles of the pipeline near Twin Lakes in western New Mexico. Federal officials say the first water delivery to Navajo communities could happen in two to three years. The pipeline project was authorized by legislation passed by Congress in 2009. The legislation settled Navajo water rights claims in the San Juan River Basin.

Power Parasol Provides Energy and Shade to ASU Campus

[Arizona Republic, Apr. 18] Last year when Arizona State University junior Felicia Rendon got into her car after a day of classes, she braced for the sizzling, dizzying temperatures that came with parking in a blacktop lot next to Sun Devil Stadium. "It was boiling-hot," recalled the 21-year-old bioscience major on her way to campus Tuesday.

That was before Lot 59 was targeted for the nation's first Power Parasol installation. Lot 59 was one of the more affordable ASU lots because of its distance from the Tempe campus and because it lacked shade. NRG Solar, an alternative-energy company, paid for the massive solar-panel structure spanning 5.25 acres. It covers 800 parking spaces in Lot 59 between ASU's football and baseball stadiums. ASU buys the energy output from NRG. Since the installation was completed in late December, it is meeting ASU's energy expectations. It is also providing much-needed relief from the broiling desert sun. The solar-energy structure's design is novel because of the height of the tinsel-hued solar panels that shade the blacktop lot. It can be used for major ASU or community events, for Sun Devils fans' tailgating parties and for student parking.

Southline Strikes a Deal With Western

[Energy Prospects West, Apr. 17] Western Area Power Administration announced an agreement April 3 that lets the Southline Transmission Co. help foot the bill for the federal agency's NEPA costs and other expenses aimed at moving the Southline Transmission Project forward. The "advanced funding agreement" will also cover the costs of WECC path rating and Western's reviews of the project and its interconnection agreements. The Southline project, named for an abandoned railroad line it would parallel, would extend for 360 miles and be built in two segments. The first is a new double-circuit 345-KV line linking existing substations at Afton, south of Las Cruces, N.M., and Apache, south of Willcox, Ariz. This 225-mile line would provide up to 1,500 MW of capacity. The second segment would be an upgrade and rebuild of about 130 miles of existing transmission lines to provide increased capacity to transmit electricity from Apache to the Saguaro substation, northwest of Tucson. It would provide an additional 1,000 MW. Lines feasible for upgrades in the area include a 115-KV line, owned by Western, and a 115-KV line owned by Southwest Transmission Cooperative, according to the April 4 *Federal Register* notice announcing the start of EIS scoping for Southline.

Sun Powers Tourists' Interest, Ranch Itself

[Arizona Daily Star, Apr. 19] Malcolm MacDonald, from England, rides past a set of solar panels while visiting the White Stallion Ranch. The decades-old ranch installed solar panels last year. For nearly 50 years, the White Stallion Ranch has relied on Southern Arizona's unwavering sunshine to help bring in business. Many of the 4,000 tourists who flock to the Old West-style guest ranch annually to ride, rope and play cowboy decide on the Stallion because of the good weather, especially during peak season, said co-owner Russell True. These days, the sun is doing much more for the place than providing a selling point for potential visitors. For a little more than a year, the White Stallion, nestled along the Tucson Mountains, at 9251 W. Twin Peaks Road, has depended on solar power to help with its day-to-day electrical needs. Multiple solar structures, erected by the Oro Valley-based company Solar Path, line the north end of the 3,000-acre compound and come in different shapes and sizes. Some are large enough to be used as shaded parking by ranch staff. Others appear as staggered "solar trees," large stand-alone structures clustered in groups along the graded dirt road that leads to the main facility. A third set sits atop the bunkhouse where staff members live.

Top Bid on Peoria Plant is $250,000

[Arizona Republic, Apr. 17] A Chinese company placed the winning bid of $250,000 for the bankrupt solar power plant in Peoria during an online auction Tuesday, getting a steep discount to its building cost. The power plant received a $7 million federal grant in 2010, according to Energy Department records. Solar projects were eligible for grants of as much as 30 percent of their capital cost, which implies the plant cost as much as $23 million. The auction price might seem like a steal, but the buyer must move all 60 of the 40-foot mirrored dishes and complete the complex job of disconnecting them from the electrical grid and compressed hydrogen system, trustee Lothar Goernitz said. "It depends on your perspective," Goernitz said. "I don't know what the cost will be to take it down." And the buyer won't get the instruction manual or any technical information about the power plant, because the sale was for equipment only. He said the winning bidder was CondiSys Solar Technology Inc. of China, but he was unsure if the buyer planned to restart the power plant. Other companies use similar dish-Stirling technology, but the design has recently fallen out of favor as the price of more common, black solar panels has come down. A representative of CondiSys could not be reached, but a company product description online indicates it makes dish-Stirling systems in a variety of sizes, including some nearly identical in size and capacity as those in Peoria

ALTERNATIVE ENERGY AND EFFICIENCY

Geothermal Energy Growing in 2012

[Forbes, Apr. 18] The prices of heating oil, natural gas, propane and electricity continue to rise, leaving more municipalities open to the idea of natural climate control methods. One method gaining considerable attention is geothermal heating and cooling. It’s energy efficient, clean and now becoming cheap when weighed against traditional counterparts. *How Geothermal Heating Works* **-** Geothermal systems work by trading energy with the

ground. The ground is cooler than the surrounding air in summer and warmer in winter. Remaining at a constant range of 45 to 75 degrees Fahrenheit (depending on location), borrowing heat or cool air from the ground is ideal for balancing temperatures in both public and private buildings. Heat exchange pumps above ground extract energy from water to provide building heat in winter and cooling in summer. Pumps above the ground transfer water through a system, allowing the exchange of warm and cool air. The tubing that contains the water can run horizontally or vertically through the ground. Ground temperatures are generally cooler than most people consider comfortable and additional heating sources are still needed for hot water. For this reason, the largest benefit of geothermal heating and cooling comes from its ability to cool warm spaces. According to the US Department of Energy, "The biggest benefit of GHPs [Geothermal Heat Pump Systems] is that they use 25%–50% less electricity than conventional heating or cooling systems. This translates into a GHP using one unit of electricity to move three units of heat from the earth." *The Numbers* **-** Many of these systems have already proven themselves in the Pacific Northwest where more than 15,000 systems operate. The national rate of growth for this type of heating system is estimated at 10 to 15 percent annually.

NREL Catalyst Brings Drop-in Fuels Closer

[NREL, Apr. 11] Washington, D.C. – We live in a petroleum-based society, and the oil we use comes from plants that were buried eons ago and changed under pressure and high temperatures. As countries across the globe face dwindling oil supplies and the environmental impacts of tapping hard-to-process shale oil, the question arises: is there a greener way to replicate Mother Nature? Researchers at the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) are looking for ways to thermochemically treat biomass to arrive at an end product that is similar to oil. One way to get there is through a process called gasification. Gasification takes biomass and heats it with steam and air to produce synthesis gas, or syngas. Syngas is a mixture of hydrogen and carbon monoxide — the building blocks of fuels and chemicals. After the syngas goes through another catalytic process, it is possible to make almost any type of related fuel or chemical. But copying Mother Nature is rarely easy. During the syngas process, tars and other undesired components are also created. These tars can foul the refining process and must be removed from the syngas before the fuel-synthesis step. NREL has patented a fluidizable tar reforming catalyst that converts tars into additional syngas to make thermochemically derived biomass syngas ready for fuel synthesis.

UK, U.S. to Agree to Work on Floating Wind Turbines

[Reuters, Apr. 23] DON - Britain and the United States will agree to collaborate on developing floating wind turbine technology at a clean energy ministerial meeting in London this week, the UK's department of energy and climate change (DECC) said on Monday. Energy ministers from 23 of the world's biggest economies meet Wednesday and Thursday to discuss how to speed up the move to cleaner energy technologies. Britain and the United States are expected to agree to collaborate in areas such as power generation, (including low-carbon technologies), energy transmission and energy efficiency, DECC said in a statement. The two are already making funding available for floating wind technology and hope to share their expertise, which should result in the development of more cost-effective and higher yield floating technologies, DECC added.

ENERGY/GENERAL

$4 Gas Reinforces Trend toward Lower U.S. Fuel Consumption

[Washington Post, Apr. 17] Are American motorists finally changing their gas-guzzling ways? As prices have neared and in some cases topped $4 a gallon, drivers have cut their consumption of gasoline to its lowest levels in a decade, driving less and buying cars that are The adjustment has slowed the climb in gasoline prices, which until last week had risen for 10 consecutive weeks, and could preserve some money for Americans to spend on other items as the economy struggles to recover more convincingly. "Over the last four weeks, motor gasoline product supplied has averaged 8.6 million barrels per day, down by 4.0 percent from the same period last year," the Energy Information Administration (EIA) said last week. In the Washington area, there has been an increase in applications for carpooling under the Commuter Connections program, which links people seeking to share rides. Applications rose 20 percent last year and 10 percent in January and February, in each case closely tracking the increase in gasoline prices, according to Ronald Kirby, director of the department of transportation planning for the Metropolitan Washington Council of Governments. The response to $4 gasoline is reinforcing a trend toward lower fuel consumption. This will be the third year in the past five with historically high oil prices. Even before the latest price spike, gasoline consumption had dropped 6 percent from 2007 through 2011, the EIA said.

Cheap Fracked Gas Could Help Americans Keep on Truckin'

Companies and researchers are working on infrastructure and technologies to help bring the nation's growing stock of natural gas to fuel tanks, including those of long-haul vehicles

[Scientific American, Apr. 23] A different kind of truck stop is coming soon to Atlanta. Greg Roche, vice president for infrastructure at Clean Energy Fuels, is presently scouting locations to build one of the California-based company's natural gas fueling stations for long-haul trucks by the end of this year. With fracking techniques freeing more and more natural gas in the U.S., the alternative fuel is suddenly much cheaper than those made from petroleum. "A trucker can save one third of his energy spend by switching to natural gas," Roche notes, thanks to the historically low prices for the gaseous fuel occasioned by the boom in U.S. shale gas development via hydraulic fracturing. "It's also good for the environment because it's the cleanest fuel available for big-rig trucks." Clean Energy Fuels already operates six fueling stations dispensing liquefied natural gas (LNG) to the big trucks that ply the nation's highways, ranging from San Diego to Seville, Ohio. Truck stops that pump LNG can be distinguished by their tall, thin storage silos—capable of keeping up to 68,000 liters of this fuel at low temperatures and high pressures. The LNG, trucked in from big liquefying plants much like diesel fuel is trucked in from refineries, then powers the trucks over hundreds of kilometers. Such a station in the port of Long Beach, Calif., already can handle 1,200 trucks a day.

EPA Releases List of Cities with the Most Energy Star Buildings in the United States

Los Angeles, Washington, D.C., Atlanta, Chicago, San Francisco rank in top five, cutting energy costs while increasing efficiency, protecting health, reducing pollution

[EPA, Apr. 11] Washington, D.C. – Today the U.S. Environmental Protection Agency (EPA) released the annual list of U.S. metropolitan areas with the most Energy Star certified buildings for 2011. The list of 25 cities is headed by Los Angeles, Washington, D.C., Atlanta, Chicago, San Francisco, New York, Houston, Dallas, Riverside, Calif. and Boston. By the end of 2011, the nearly 16,500 Energy Star certified buildings across America have helped save nearly $2.3 billion in annual utility bills and prevent greenhouse gas emissions equal to emissions from the annual energy use of more than 1.5 million homes.

INDUSTRIES AND TECHNOLOGIES

Small Engines are Transforming Auto Industry

[USA Today and the Detroit Free Press, Apr. 16] There's a new class of super-engine on the road, and it's not what you expect. Some of the most exciting, technically intriguing engines today aren't throbbing V-8s, exotic V-12s, trendy electric-gasoline hybrids or post-modernist hip European diesels. Engines as small as 2 liters were long dismissed as weaklings fit only for little economy cars. Americans weren't inclined to take an engine seriously if the total displacement of its cylinders was the same size as a 99-cent bottle of Coke. Today, 2-liter, four-cylinder engines propel high-powered sport sedans, elegant roadsters and roomy crossover SUVs. "This is a huge transformation in the industry," said Tom Murphy, executive editor of Wards AutoWorld magazine, which publishes the influential 10 Best Engines list. After building mediocre four-cylinder engines for years, General Motors and Ford are at the forefront of the trend, offering high-powered small-displacement engines with the likes of Audi, BMW and Volkswagen. Japanese automakers have been slow to join the party, but Korea's Hyundai and Kia are firmly on the bandwagon. North American use of four-cylinder engines will grow 74% from 6.9 million to 12.2 million over the next 10 years, according to IHS Automotive. IHS predicts V-6 and V-8 use in North American-made vehicles will fall 17% to about 6 million over the same period. The new four-cylinder engines produce as much power as six- or even eight-cylinder engines, but use less fuel and emit fewer pollutants. They achieve this thanks to turbocharging, high-pressure injection of fuel directly into the cylinders, electronic controls and new transmissions.

Solar Shakeout Spreads With Most Job Cuts Since Solyndra

[Bloomberg News, Apr. 18] First Solar Inc.'s decision to fire 30 percent of its staff and reduce production shows that even the biggest solar panel makers aren't immune from the shakeout that's bankrupted at least eight companies on two continents in the past year. The largest thin-film solar producer said yesterday it will cut 2,000 jobs by the end of the year at a cost of as much as $370 million. It marks the biggest staff reduction for the industry since bankrupt Solyndra LLC, backed by U.S. government loans, dismissed its 1,100 employees on Aug. 31. Solar manufacturers, which expanded rapidly to meet double- digit demand growth in the past decade, are struggling with subsidy cuts in Europe and plunging natural-gas prices that make renewable energy less competitive. The largest producers in China say their profits will slump this year as shipments grow. "Oversupply has become a problem for the entire industry," said Ben Schuman, an analyst at Pacific Crest Securities LLC in Portland, Oregon. "China's manufacturers have not demonstrated rational behavior." Solar panel prices have fallen 46 percent in the past year as manufacturers led by First Solar and Suntech Power Holdings Co., the world's largest solar company, boosted output. Germany and Italy, the two biggest markets, are cutting rates paid

for solar power to curb an uncontrolled installation boom.

Startup Aims to Bring the Liquid Battery to Market

A Cambridge company is developing cheap batteries that can store power from wind turbines and solar panels.
[MIT Tech Review, Apr. 23] The workspace at Liquid Metal Battery's small basement headquarters in Cambridge, Massachusetts, looks more like a machine shop than a high-tech lab you might expect from a spin-off from MIT. In the place of vacuum chambers and rows of sealed glove boxes sit a large bandsaw, a drill press, and a simple welding station. In another corner sits an ordinary kiln like you might find in a pottery studio. Although the company's technology is based on advanced chemistry, the batteries look rudimentary: thick-walled steel cans that the researchers fill with powder scooped from large buckets and barrels. The simplicity is by design. The company's goal is to make batteries so inexpensive that they can cheaply store wind power generated at night when it is often windy but power demand is low, for use during times of peak demand during the day. It has attracted millions of dollars in early-stage investments from Bill Gates, the French oil company Total, and the U.S. Advanced Research Projects Agency for Energy. Liquid Metal, which was founded in 2010 but only started operating in earnest last fall when it expanded from seven to 17 employees, is one of several new companies hoping to learn from the challenges faced by an earlier wave of clean-energy startups. Clean-energy companies have struggled in part because incumbent technologies—such as fossil-fuel power plants, gas-powered cars, and even conventional solar cells—are so cheap, and because utilities favor established technologies.

Survey: Four U.S. Solar Manufacturers Injected More Than $400 Million into Other Manufacturers and Employers in 46 States in 2011

Per-state purchasing up to $86 million illustrates solar manufacturing's multiplier effect
[Yahoo Finance, Apr. 17] Washington, D.C. – Four of the founding manufacturers of the Coalition for American Solar Manufacturing (CASM) purchased more than a combined $400 million in goods and services from other manufacturers and employers in 46 states in 2011, according to a CASM survey. This flow of business highlights just one dimension of solar manufacturing's multiplier effect in supporting jobs and spurring activity across the U.S. economy, according to CASM. The coalition of about 190 U.S. employers of more than 16,000 American workers contends the nation cannot afford to lose its own industry, particularly in light of advanced manufacturing's power to generate high-paying and stable jobs and beneficial ripple effects, including research and innovation. Instead, CASM seeks trade-law enforcement to restore legal international competition and domestic manufacturing growth. CASM is backing an anti-subsidy and anti-dumping trade case against the Chinese industry. In March, the U.S. government issued a preliminary ruling that at least 10 categories of Chinese government programs illegally subsidize Chinese producers of solar cells and panels. China's export drive has caused a dozen U.S. solar manufacturers to shut down, declare bankruptcy or lay off employees in all U.S. regions since 2010, CASM alleges, even though the National Renewable Energy Laboratory concluded Chinese producers face a cost *disadvantage* in producing and delivering solar into the U.S. market. According to the CASM purchasing survey, four of the coalition's seven founding manufacturers purchased a total of more than $1 million in goods and services in 21 states and at least $50 million in four states: Oregon ($86 million) and Pennsylvania ($74 million), Michigan ($60.8 million) and California ($50 million). (For more detailed survey highlights, go to the CASM website.) The total helps employers cover payrolls in upstream sectors such as glass fabrication, polysilicon production and aluminum extrusion, and downstream services such as auditing, laboratory analysis and transportation.

LEGISLATION AND REGULATION

Clean Tech Nears Crossroad as Federal Funding Falls

With less federal money to go around, more clean-tech companies are likely to go bankrupt or be consolidated, a report says.
[LA Times, Apr. 18] San Jose, CA – Federal spending on clean technologies is drying up, with little sign of additional help coming from Congress, according to a report. As a result, more clean-tech companies are likely to go bankrupt or be consolidated, according to the study released Wednesday by the Brookings Institution and the Oakland-based Breakthrough Institute. In 2009, federal spending on renewable sources of energy reached an all-time high of $44 billion as one-time stimulus funding, part of the American Recovery and Reinvestment Act, pumped additional millions of dollars into clean technologies, according to the study. But as the stimulus funding and other policies wind down, federal spending dropped to $30.7 billion in 2011 and will fall to $16.1 billion this year. By 2014, federal spending on clean technology is expected to be just $11 billion, amounting to a 75% drop in five years. "We're falling off the cliff," said Mark Muro, a senior fellow at the Brookings Institution. The federal wind energy production tax credit, for example, which provides incentives for wind farms, is scheduled to expire at the end of this year. Wind developers are racing to finish construction projects, and the uncertainty over the credit's future has stalled many other projects in the pipeline. The wind industry is lobbying Congress to extend

the credit for an additional four years. While California has aggressive renewable-energy goals, including a law requiring state utilities to get 33% of their electricity from renewable sources by 2020, the lack of a nationwide energy policy has created a boom-bust cycle that needs to be radically changed, the report says. "Clean-energy policy in America is at a crossroads," it says. "Federal support for clean tech is now poised to decline precipitously — unless policymakers and industry work together to enact smart reforms that can ultimately free clean energy from subsidy dependence and put clean-tech sectors on a path to sustainable, long-term growth." The waning federal investment comes as clean-technology market subsidies are being cut in Europe and as renewables face increasing competition from low-cost natural gas. Meanwhile, Wall Street has turned cool toward solar stocks.

EPA Fracking Regulations to Be Implemented Soon

[Associated Press, Apr. 18] Washington, D.C. – The Obama administration on Wednesday set the first-ever national standards to control air pollution from gas wells that are drilled using a method called hydraulic fracturing, or fracking, but not without making concessions to the oil and gas industry. President Barack Obama in his State of the Union address strongly backed natural gas drilling as a clean energy source, and recently announced an executive order calling for coordination of federal regulation to ease burdens on producers. But he has come under criticism by the industry and Republicans for policies they say discourage energy development. Top EPA officials said Wednesday that the new regulations would ensure pollution is controlled without slowing natural gas production.

Interior Identifies Additional 1.5 Million Mwh of Hydro Potential at Existing Reclamation Sites

[Power Engineering, Apr. 20] The U.S. Department of Interior has identified 373 existing Bureau of Reclamation canals and conduits with the combined potential to generate an additional 365,219 MWh of hydroelectric power annually. The finding builds on a 2011 Reclamation study, which identified 191 existing sites with a potential for 1.2 million MWh annually. "Hydropower is an important part of President Obama's initiative to generate 80 percent of electricity in this country from a diverse set of clean energy sources by 2035," says interior secretary Ken Salazar. "Identifying and developing hydropower at existing facilities is one way we're putting the all-of-the-above strategy to develop American energy sources into practice." The 2012 report, titled "Site Inventory and Hydropower Energy Assessment of Reclamation Owned Conduits", supplements the 2011 report, which was titled "Hydropower Resource Assessment at Existing Reclamation Facilities". The newest report shows about 70 percent of the potential capacity is in Colorado, Oregon and Wyoming, although 13 of the 17 "western" states have new generation potential from conduits.

U.S. Tariffs on Chinese Solar Cells Fuel Debate about Green Jobs

Some domestic solar manufacturers praised the recent import levy as a victory for job creation, but an analysis of the industry suggests the duty may actually be a job killer.

[Los Angeles Times, Apr. 23] A simmering trade dispute is highlighting a debate about the kinds of jobs America can sustain in a greening economy. The Obama administration's recent decision to slap import tariffs on Chinese solar cells was hailed by some domestic solar manufacturers as a victory for job creation, leveling the field while also sending a powerful message to Beijing about monopolistic behavior in crucial industries. But a close look at the U.S. solar industry suggests that the tariffs may actually be a job killer because the vast majority of positions in the sector aren't on the assembly line. Instead, upward of 70% of U.S. solar employment is in installation, sales and distribution — and companies that hire those workers argue solar cells must get significantly cheaper to remain competitive with other energy sources. "What China is doing to boost its manufacturers is unfair, but tariffs could actually reduce jobs," said Gordon Johnson, a green tech analyst at Axiom Capital Management. "The price of solar panels goes up and looks unaffordable compared to alternatives."

WESTERN POWER

Solar Power Producers Hesitate to Embrace New DWP Program

A DWP pilot program will let solar power producers reduce their bills and sell excess energy, but some say they're worried the new system will be plagued by the same problems as an older system.

[LA Times, Apr. 23] Storm clouds hovered over the San Fernando Valley, but businessman Jack Engel was smiling as he pointed to a row of solar inverters at one of two commercial warehouses he owns in Sun Valley. Power was being generated despite the weather, no problem. His problem, he said, has been the Los Angeles Department of Water and Power. "I like the idea of solar, but unfortunately my experience is that the DWP doesn't support it," said Engel, who has run a small manufacturing firm on Pendleton Street for four decades. "The conversation is one thing, the reality is another." That's why he is saying thanks but no thanks to the DWP's long-awaited "feed-in-tariff" program. Approved by the City Council two weeks ago, the pilot program would allow solar producers like Engel to not only reduce power bills but also to sell back excess energy to the DWP. Engel paid

$300,000 to install his own system in 2010 and expects to eventually recoup much of that cost in lower power bills. But the DWP's administration of its earlier solar program, known as "net-metering," was frustrating. It was a year before he was given the green light to turn on his system, he said, and the DWP's billings were so complex that it took several calls to track down the one woman — now retiring — who could explain them.

Turbines Harvest Energy From Water Pipelines

[Energy Prospects West, Apr. 17] A Portland startup has created an in-pipe hydropower turbine that allows anyone with a large-diameter, gravity-fed water pipeline to generate electricity. Lucid Energy's technology turns untapped energy from fast-moving pipeline water into electricity by placing a turbine inside a pipe which generates electricity from moving water. A single Lucid turbine can produce as much as 100 KW, and a pipeline fully loaded with a series of those turbines can generate up to 1 MW of power at a levelized cost of energy between 5 and 9 cents per KWh, according to Josh Kanagy, Lucid's director of business development. "The sun always shines for us because the water is always flowing," Kanagy told *Energy Prospects West.* "Our turbines have very high capacity factors." The company was formed in 2007 and is backed by Northwest Pipe Co. of Vancouver, Wash. Renewable Energy Solutions, a subsidiary of Vancouver-based Christensen Shipyard Ltd, is the company's manufacturing partner. Lucid's in-conduit hydropower turbines qualify for inclusion in some state renewables portfolio standards, such as Washington and California, which have made provisions for in-conduit and small hydropower. The technology also qualifies for the federal production tax credit.

ARIZONA STATE INCENTIVES/POLICIES

Arizona Commerce Authority (ACA)

- Angel Investment Tax Credit Program The main objective of the Angel Investment program is to expand early stage investments in targeted Arizona small businesses. The program accomplishes this goal by providing tax credits to investors who make capital investment in small businesses certified by the Arizona Commerce Authority (ACA). To view the list of businesses that have been certified under this program please click here.

Income Tax Credit Provisions

An investor seeking an income tax credit must document to the ACA the investment was made in either a qualified rural or bioscience company or any other qualified small business. For a qualified bioscience or rural company, the tax credit may total up to 35% of the investment amount over three years; for any other qualified business, the tax credit may total up to 30% over three years. If the tax credits exceed the investor's income tax liability, any unused tax credit amount may be carried forward for up to three taxable years as long as the investor timely claims the credits with Revenue.

The ACA may authorize up to $20 million in tax credits to qualified investors beginning July 1, 2006 through June 30, 2016. The tax credits will be authorized on a first come, first served basis, which is established by the date and time the investor files an application with the ACA. Download the Angel Tax Credit Allocation Table Angel Tax Credit Allocation Table to view the remaining amount of tax credits available. For more detailed information please see below or direct questions to the Program Manager.

- Job Training Program offers job specific reimbursable grants for employers creating new jobs or increasing the skill and wage level of their current employees. **Deadline: Year Round**

- Quality Jobs Tax Credit Program Beginning July 1, 2011, this new program provides Arizona income tax credits for companies creating new jobs and investing in Arizona. The credit is valued at up to $9,000 over a 3-year period per each new employee and offers a 5-year carry forward provision for any unused tax credits. Eligibility qualifications are different for rural and metro areas

- Renewable Energy Tax Incentive Program offers a refundable income tax credit and property tax reduction to companies in solar, wind, geothermal and other renewable energy industries who are expanding or locating a manufacturing or headquarters operation in Arizona. The tax credit is up to 10% of the total qualified investment amount and the property tax benefit can reduce a company's property taxes by up to 75%. **Deadline: Year Round**

- Research and Development Tax Credit is an Arizona income tax credit for increased research and development activities conducted in this state. Starting in 2010, a qualifying company may be eligible to claim a partial refund of its current year excess R&D credit. **Applicants may apply at the end of their tax year but prior to filing a tax return with Revenue.**

- Commercial/Industrial Solar Energy Tax Credit Program - The primary goal of the Commercial/Industrial Solar Energy Tax Credit Program is to stimulate the production and use of solar energy in commercial and industrial applications by subsidizing the initial cost of solar energy devices. The program achieves this goal by providing an Arizona income tax credit for the installation of solar energy devices in Arizona business facilities. For more detailed information please see below or direct questions to the Program Manager.

- **Database of State Incentives for Renewables and Efficiency (DSIRE)**
  - Arizona Incentives/Policies
  - Federal Incentives/Policies
  - Solar Policy News - DSIRE provides summaries of current solar policy developments and an archive of past solar policy developments. Current solar news appears below the news archive, which is searchable by several criteria.

GRANTS

The following solicitations are now available:

Energy Storage SBIR/STTR FOA
The Advanced Research Projects Agency-Energy (ARPA-E) is an agency within the Department of Energy (DOE) that has funded the development and deployment of transformational and disruptive energy technologies and systems since 2009. ARPA-E focuses on high-risk concepts with potentially high rewards. When it established ARPA-E, Congress directed ARPA-E to: (1) enhance the economic and energy security of the United States through the development of energy technologies that result in reductions of imports of energy from foreign sources, reductions of energy-related emissions, and improvements in the energy efficiency of all economic sectors; and (2) ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies. This program seeks to fund the development of transformational technologies that reduce the barriers to mass adoption of electrical energy storage for stationary and transportation applications. To obtain a copy of the Funding Opportunity Announcement (FOA) please go to the ARPA-E website at https://arpa-e-foa.energy.gov. Reference Number: DE-FOA-0000674. Response Due Date: 5/23/2012 5:00:00 PM ES. Use the following link to view this opportunity: https://www.fedconnect.net/fedconnect?doc=DE-FOA-0000674&agency=DOE

NEW! Hydropower Advancement Project (HAP) - Standard Assessments to Increase Generation and Value
The Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), Wind and Water Power Program, is seeking applications from hydropower professionals to participate in the Hydropower Advancement Project (HAP) standard assessments activity. The HAP standard assessments will identify opportunities to increase generation and value at existing hydropower facilities. Through this FOA, DOE will select teams to perform these standard assessments. The selected teams will perform HAP standardized assessments as described herein and per the HAP documents associated with the standard assessments. The HAP documents are available at http://hydropower.ornl.gov/HAP/ and include the following: 1. Hydropower Technology Taxonomy (HTT) 2. Best Practices Catalog (BPC) 3. Assessment Manual The selected teams will receive financial assistance in the form of a cooperative agreement and will complete HAP standardized assessments at five (5) or more hydropower facilities. Assessment teams that are selected will be required to attend the HAP standard assessment training planned for October, 2012, and then to perform multiple HAP standard assessments as described herein and per the HAP documents. Funding Opportunity Number: DE-FOA-0000700 Application Due Date: 06/14/2012 5:00 pm Eastern Time. Use the following link to view this opportunity: http://www.grants.gov/search/search.do;jsessionid=LBkTPVsQTL2np1gbwnhlF4rTnC6wWFXtdL1CJcN1Tbwsy0s9mh2c!1471941753?oppId=164353&mode=VIEW

NEW! Improving Accuracy of Solar Forecasting (FOA)
This Funding Opportunity Announcement (FOA) is being issued by DOE to solicit applications for improving accuracy of solar forecasting in the short-term (0-6 hours) and day-ahead timeframes. This FOA is part of the DOE SunShot Initiative and addresses the EERE performance metric of increasing the viability and deployment of renewable energy technologies. Launched in 2011, the SunShot Initiative aims to reduce the cost of solar energy systems by about 75% between 2010 and 2020. Achieving this target could result in solar meeting roughly 14% of U.S. electricity needs by 2030 and 27% by 2050. Advancements in generation (conventional as well as solar) and transmission technology, improved accuracy in solar resource forecasting, the evolution of operational practices,

and the adoption of consistent codes, standards, and regulatory procedures will collectively enable the successful integration of high levels of solar penetration on the grid. Specifically, there is a significant need for strong leadership and a clear way forward in: (a) establishing a standard set of metrics for solar forecast accuracy assessment, (b) development of new methods/algorithms/processes for solar forecasting, and (c) a rigorous estimation of the various value streams (including economic and reliability aspects) due to improved accuracy solar forecasting. Funding Opportunity Number: DE-FOA-0000649. Current Closing Date for Applications: Jun 19, 2012. Letters of Intent will be required and are due by 05/16/2012 5PM EST. Use the following link to view this opportunity:
http://www.grants.gov/search/search.do;jsessionid=JkJRPVnJnLJ52l2ncL8cms8yJQv7qGGNpBXR0PZvTgvtv3kLcLVV!1471941753?oppId=164854&mode=VIEW

NEW! Plug and Play Photovoltaics
Through the Plug and Play Photovoltaics Funding Opportunity Announcement (FOA), the Department of Energy will invest up to $25 million over five years to advance the development of a commercial plug-and-play photovoltaic system, which is envisioned as an off-the-shelf product that is fully inclusive with little need for individual customization. Homeowners can install the system without special training or tools. The homeowner simply plugs the system into a PV-ready circuit and an automatic PV discovery process initiates communication between the system and the utility. The plug-and-play concept has been implemented very successfully in the computer and automotive industries. The Department of Energy believes that these same innovations can be applied to the PV industry to reduce costs and simplify installations. This funding opportunity seeks to fundamentally change the design and installation of residential PV systems and help automate utility interconnection and permitting processes. Universities, industry, utilities, local authorities having jurisdiction, national laboratories, and other stakeholders are encouraged to submit full applications by June 18, 2012. Funding Opportunity Announcement Number: DE-FOA-0000653. Issue Date: 04/16/2012. Letter of Intent Due Date: 05/16/2012, 5:00 PM Eastern Time. Application Due Date: 06/18/2012, 5:00 PM Eastern Time.
Use the following link to view this opportunity:
http://www.grants.gov/search/search.do?mode=VIEW&oppId=164933

SBIR/STTR FY 2012 Phase I (Release 3)
This Funding Opportunity Announcement (FOA) describes Phase I funding opportunities for the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs for Fiscal Year 2012 Phase I (Release 3). Reference Number: DE-FOA-0000715. Response Due Date: 7/3/2012 11:59:00 PM ES
Use the following link to view this opportunity:
https://www.fedconnect.net/fedconnect?doc=DE-FOA-0000715&agency=DOE

Office of Science
The U.S. Department of Energy announces its continuing interest in receiving applications for the Office of Science Financial Assistance Program. Areas of interest include, but are not limited to: Basic Energy Sciences and Biological and Environmental Research, and Workforce Development for Teachers and Scientists. Subtopics include Solar Photochemistry Research, and Climate Sciences. $400 million expected to be available, multiple awards anticipated. Refer to Sol# DE-FOA-0000600. (Grants.gov 9/30/11) Responses due 9/30/12. For more info, contact Kimberlie Laing at kim.laing@science.doe.gov or go to:
https://www.fedconnect.net/fedconnect/?doc=DE-FOA-0000660&agency=DOE.

U.S. Navy Energy Conservation Projects
The Naval Surface Warfare Center has issued a Broad Agency Announcement for White Papers that address Energy Conservation Applications for the U.S. Navy. This BAA solicits innovative concepts for Navy shipboard energy conservation and carbon footprint reduction with the potential for rapid transition to Fleet operation. The target segment of the Fleet is the ships operated by Military Sealift Command. The selection of one or more sources for full proposals and potential contract award will be based on responses to the BAA and the peer review process. For more info, contact Jamie Mattern at james.g.mattern1@navy.mil or go to:
https://www.fbo.gov/?s=opportunity&mode=form&id=f4ea9da536f0413f20b80d9f02707b7e&tab=core&_cview=0.
Refer to BAA# N00167-11-BAA-01. (FBO 11/3/10). Responses accepted to 10/31/12.

Agriculture and Food Research - Climate Change
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative (AFRI) - Climate Change. The AFRI Climate Change Program will fund projects focused on reducing greenhouse gas emissions and increasing carbon sequestration in agricultural and forest production systems and preparing the nation's agriculture and forests to adapt to changing climates. The RFP is posted at:

http://nifa.usda.gov/funding/rfas/afri_rfa.html. Refer to Sol# USDA-NIFA-AFRI-003038. (Grants.gov 3/22/10)

Agriculture and Food Research Initiative - Sustainable Bioenergy
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative (AFRI) – Sustainable Bioenergy. This program will support projects that target the development of regional systems for the sustainable production of bioenergy and biobased products that: contribute significantly to reducing dependence on foreign oil; have net positive social, environmental, and rural economic impacts; and are compatible with existing agricultural systems. The RFP is posted at: http://nifa.usda.gov/funding/rfas/afri_rfa.html.
Refer to Sol# USDA-NIFA-AFRI-003042. (Grants.gov 3/22/10)

Agriculture & Food Research Initiative - Foundational Programs
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative – Foundational Programs. The Foundation Programs support research, education, and extension as well integrated programs that address key problems of national, regional, and multi-state importance in sustaining all components of agriculture. Areas of interest include, but are not limited to: Renewable energy, natural resources, and environment; Agriculture systems and technology; and Agriculture economics and rural communities. $78 million expected to be available, up to 420 awards anticipated. Contact info and due dates vary by subject area. For more info, go to: http://www.nifa.usda.gov/funding/rfas/afri_rfa.html. Refer to Sol# USDA-NIFA-AFRI-003397. (Grants.gov 1/7/11)

Special thanks to the Washington State University Extension Energy Program for collecting this information.

ENERGY-RELATED EVENTS

- **Greentech Media's Solar Summit 2012**
  May 1 – 2, 2012 – Phoenix, Arizona
- **NEPA and EIS Compliance - Tips And Techniques to Navigate Today's NEPA/EIS Landscape**
  May 8, 2012 – Renaissance Phoenix Downtown Hotel, Phoenix, Arizona
- **World Renewable Energy Forum**
  May 13 – 17, 2012 – Denver, Colorado
- **Solar Power Mexico 2012**
  May 15 – 16, 2012 – Mexico City, Mexico
- **Cleantech Phoenix**
  Int'l. Business Symposium
  May 16- 18, 2012 – Phoenix, Arizona
- **Renewable Energy Projects in Indian Country Conference**
  May 21 – 22, 2012 – Talking Stick Resort, Scottsdale, Arizona
- **West Coast Energy Management Congress**
  May 23 – 24, 2012 – Washington State Convention & Trade Center, Seattle Washington
- **Meeting the Energy Needs of the 21st Century**
  June 7, 2012 – Tucson, Arizona
- **2012 Arizona Mexico Commission Summer Plenary**
  June 7 – 8, 2012 – JW Marriott Starr Pass Resort & Spa, Tucson, Arizona
- **Energy In the Southwest – New Directions in Energy Markets & Regulation**
  July 9 – 10, 2012 – Santa Fe, New Mexico
- **2nd International Conference on Algal Biomass, Biofuels and Bioproducts**
  June 10 – 13, 2012 – Westin San Diego, San Diego, California

- **2012 National Energy Assurance Conference**
  June 28 – 29, 2012 – Gaylord National Hotel & Convention Center, National Harbor, MD

- **Solar Power International 2012**
  September 10 – 13, 2012 – Orange County Convention Center, Orlando, Florida

- **Plastics in Photovoltaics 2012**
  September 19 – 20, 2012 – Hyatt Regency, Phoenix, Arizona

- **34th International Telecommunications Energy Conference (Intelec)**
  September 30 – October 4, 2012 – Talking Stick Resort, Scottsdale, Arizona

- **Border Energy Forum XIX**
  October 22 – 24, 2012 – Hermosillo, Sonora Mexico

- **AWEA Wind Energy Fall Sympsium**
  November 13 – 17, 2012 – Sheraton Wild Horse Pass Resort, Chandler, Arizona

- **4th PV Power Plants Conference – USA 2012**
  November 28 – 29, 2012 – Phoenix Arizona

- **Green Building Lecture Series**
  Granite Reef Senior Center – 1700 N. Granite Reef Road, Scottsdale, Arizona